

## **REMARKS/ARGUMENTS**

Applicants appreciate the consideration shown by the Office, as evidenced by the Office Action, mailed on November 15, 2007. After consideration of the Office Action, Claims 1, 6, 7, 9-11, 15, 20 and 21 have been amended, and Claims 5, 14 and 22 have been cancelled. Claims 1-4, 6-13 and 15-21 are under consideration in the present application. Applicants respectfully request reconsideration of the application by the Examiner in light of the above amendments and the following remarks offered in response to the Office Action.

### Rejections under 35 U.S.C. § 103(a)

Applicants respectfully traverse the rejection of Claims 1-4, 6-13, 15-17 and 19-21 under 35 U.S.C. §103(a) as being unpatentable to U.S. Patent No. 6,623,692 to Jackson et al. (hereinafter "Jackson"). The Examiner cites Jackson as disclosing a rhodium-based alloy comprising up to about 10 atomic percent palladium, up to about 4 atomic percent tungsten, and from about 1.5 to 4 atomic percent ruthenium.

Amended independent Claim 1 of the present application recites an alloy comprising, in atomic percent, at least about 50% rhodium; up to about 49% of a first material, said first material comprising at least one of palladium, platinum, iridium, and combinations thereof; from about 1% to about 15% of a second material, said second material comprising at least one of tungsten, rhenium, and combinations thereof; up to about 10% of a third material, said third material comprising at least one of ruthenium, chromium, and combinations thereof; a fourth material, said fourth material comprising at least one of zirconium, yttrium, hafnium, tantalum, aluminum, titanium, scandium, elements of the lanthanide series, elements of the actinide series, and combinations thereof, wherein the fourth material is present in an amount less than 3 atomic percent; wherein said alloy comprises an A1-structured phase at temperatures greater than about 1000 °C, in an amount of at least about 90% by volume.

Amended independent Claims 10, 11, 20 and 21 of the present application each recite an alloy which comprises a fourth material, said fourth material comprising at least one of zirconium, yttrium, hafnium, tantalum, aluminum, titanium, scandium, elements of the lanthanide series, elements of the actinide series, and combinations thereof, wherein the fourth material is present in an amount less than 3 atomic percent.

Jackson fails to disclose the specific alloy compositions as claimed in the present application. Specifically, Jackson fails to teach or suggest an alloy composition including a material comprising at least one of zirconium, yttrium, hafnium, tantalum, aluminum, titanium, scandium, elements of the lanthanide series, elements of the actinide series, and combinations thereof, wherein the material is present in an amount less than 3 atomic percent. In contrast, the alloy compositions described in Jackson comprise between 3% and 9% of zirconium, niobium, tantalum, titanium, hafnium or mixtures thereof for use as precipitation strengthening metals (see column 2, lines 11-15 and 21-27). The precipitation strengthening metals in Jackson are used to promote the formation of an L<sub>12</sub> structured phase in the alloy (see column 4, lines 24-28). This is in contrast to the alloys claimed in the present application in which a high volume of an A1-structured phase is desired. Jackson states that as the proportion of precipitation strengthening metals in the alloy increases, the volume fraction of the L<sub>12</sub> structured phase increases (see column 4, lines 31-34). Thus, due to the concentration of precipitation strengthening metals

in the alloys of Jackson, these alloys will not comprise an A1-structured phase at temperatures greater than about 1000° C, in an amount of at least about 90% by volume as claimed in the present application.

Accordingly, Applicants submit that independent Claim 1 and its dependent Claims 2-4 and 6-9, independent Claim 10, independent Claim 11 and its dependent Claims 12, 13, 15-17 and 19, independent Claim 20, and independent Claim 21 are patentably distinct and allowable over Jackson.

Applicants respectfully traverse the rejection of Claims 1-4 under 35 U.S.C. §103(a) as being unpatentable to U.S. Patent No. 2,370,242 to Hensel et al. (hereinafter "Hensel"). This reference fails to teach, suggest, or disclose at least one element of the alloy composition as claimed in the present application.

The Examiner cites Hensel as disclosing an intermediate compound made from 0.01 to 90 percent (inherently by weight) palladium-platinum group metal and 10 to 99 percent (inherently by weight) refractory metal.

As stated above, amended independent Claim 1 of the present application recites an alloy comprising a fourth material, said fourth material comprising at least one of zirconium, yttrium, hafnium, tantalum, aluminum, titanium, scandium, elements of the lanthanide series, elements of the actinide series, and combinations thereof, wherein the fourth material is present in an amount less than 3 atomic percent.

Hensel fails to disclose the specific alloy compositions as claimed in the present application. Specifically, Hensel fails to teach or suggest an alloy composition including a material comprising at least one of zirconium, yttrium, hafnium, tantalum, aluminum, titanium, scandium, elements of the lanthanide series, elements of the actinide series, and combinations thereof, wherein the material is present in an amount less than 3 atomic percent.

Accordingly, Applicants submit that independent Claim 1 and its dependent Claims 2-4 are patentably distinct and allowable over Hensel.

Applicants respectfully traverse the rejection of Claim 18 under 35 U.S.C. §103(a) as being unpatentable over Jackson, and further in view of U.S. Patent No. 4,305,998 to Manty et al. (hereinafter "Manty"). This combination of references fail to teach, suggest, or disclose at least one element of the alloy composition as claimed in the present application.

The Examiner cites Manty as teaching the application of a protective coating to an aircraft engine component wherein the coating is made of chromium, molybdenum, niobium, tantalum, vanadium, zirconium, platinum, or rhodium or a combination thereof or alloy of any of these metals. However, the Examiner does not address any of the issues described about regarding Jackson. Thus, it is submitted that Manty fails to supply the deficiencies of Jackson as previously set forth, and this combination of references fails to teach, suggest, or disclose each and every element recited in the rejected claim. Accordingly, Applicants respectfully submit that Claim 18 is allowable over the applied combination of references.

Double Patenting

The Examiner has rejected Claims 1-4, 6-13, 15-17 and 19-21 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over Claims 14 and 17-29 of U.S. Patent No. 6,623,692 to Jackson et al. Applicants believe the claims of the present application are patentably distinct from Claims 14 and 17-29 of the '692 patent. Specifically, Claims 14 and 17-29 of the '692 patent fail to describe an alloy which includes a material comprising at least one of zirconium, yttrium, hafnium, tantalum, aluminum, titanium, scandium, elements of the lanthanide series, elements of the actinide series, and combinations thereof, wherein the material is present in an amount less than 3 atomic percent, as claimed in the present application. Accordingly, Applicants respectfully request removal of the double patenting rejection.

Conclusion

In light of the remarks presented herein, Applicants believe that this serves as a complete response to the subject Office Action. If, however, any issues remain unresolved, the Examiner is invited to telephone the undersigned representative at the telephone number provided below.

Respectfully submitted,

By           /Shelby Grier/            
Shelby Grier  
Reg. No. 45,785

January 10, 2008  
1114 New Point Boulevard  
Suite 100  
Leland, NC 28451  
Telephone: (202) 491-1727